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Rail-Road News.

The Virginia Central Railroad.

A meeting was held in Richmond, Va., on the 1st inst., to take into consideration the extension of the Virginia central railroad from Staunton to Covington. Among the speakers were General Chapman, of Monroe, and Hon. Henry A. Wise. A preamble stating that, whereas, by an act passed at the last session of the General Assembly, the capital stock of the Company was increased to the sum of $700,000, three-fifths of which are to be paid by the State when two-fifths are raised by others than the Commonwealth, was followed by a resolution, unanimously adopted, that the city of Richmond ought to subscribe, at the proper time, the full proportion of the said three fifths.

Hudson River Railroad.

This road has declared a dividend of 3½ per cent. for the last six months. It is doing well. The engines are excellent and run at a great speed; the rails and track are not kept in such order as the machinery—this is evident to any person who travels on the road. A large force is now on the road between Poughkeepsie and Albany, and when the road is completed to Greenbush, we will have direct railroad communication to Albany and Troy. "There's a good time coming."

Lebanon Valley Railroad.

The survey of the proposed route of this road is completed through from Harrisburg, Pa., to Reading. It is to cross the Schuylkill a short distance below Reese's mill in Reading. Operations for the grading and levelling the road will, in a short time be commenced.

Dayton and Springfield, Ohio Railroad.

The Dayton Journal, of the 30th, says, the iron is laid on the track to Springfield, about twelve miles out of Dayton—that the road will be completed to Springfield so as to have the cars running by Christmas.

The Central Ohio Railroad.

The letting of twenty-two miles of grading and masonry on the Railway from Covington, Miami County, to St. Paris, in Champaign County, is advertised in the Cincinnati Gazette.

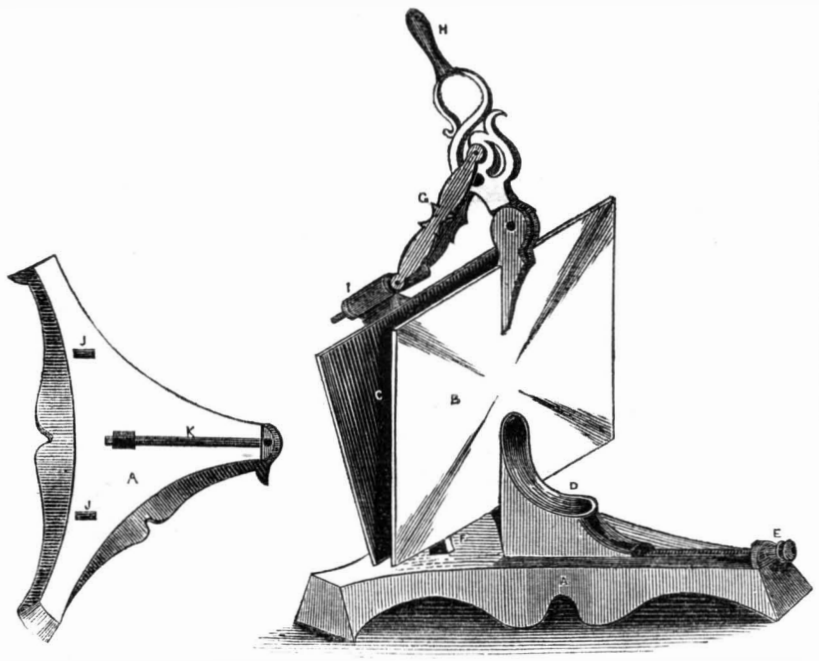
The private subscriptions in Maysville, Ky., for building the railway from that city to Lexington, have been secured to the amount of $50,000, and the Eagle says the amount will probably be increased to $100,000. The aggregate from the city will not be less than $200,000.

Losing the Trade.

The Newburyport Herald says that American castor oil, formerly the best article of the kind in the market, and in demand for even foreign shipment, has now become almost unsaleable, owing to its great adulteration by the mixture of lard oil.

IMPROVED HAND COPYING PRESS.

Figure 2. Figure 1.



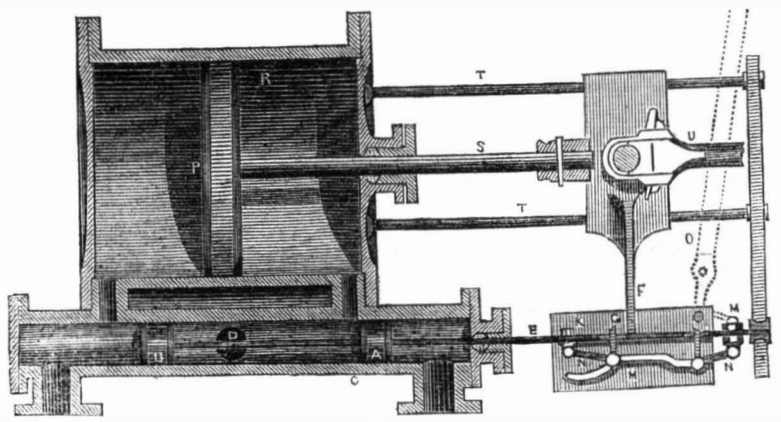
This is a very neat and good invention of Mr. A. A. Wilder, of Detroit, Michigan, the author of the Leeway Indicator, illustrated and described in our last number. (The initial of the name being wrong therein.) This is a lever, not a screw press, and is very convenient and rapid in its operation, beside being so combined as to be quick in its first motion, giving out little power, and slow towards the end of the stroke, giving out the greatest amount of power, where it is most required.

Figure 1 is a perspective view, and figure 2 is a plan view of the bed plate. A is the bed plate, with a sliding bolster, D, on it. This bolster moves in a groove, K, (fig. 2) and is set by a screw (E, fig. 1) at any part of this groove, so as to open or narrow the space between the pressure plates for the receiving of parcels of various thickness, to be pressed. B is a pressure plate, secured to the bolster, D. C, is the moveable pressure plate, with two projection shoulders, F, (one only seen) which are inserted in grooves, J J, of the bed plate (fig. 2) to move, as it were, on their projection shoulders, as on axes in the said plate. The two plates, B C, are now set open to receive any parcel for pressing, the plate, C, being thrown back for that purpose. They are both united together by the rule links, G. H is the handle or lever which moves on a pivot joint at its lower end, on the top of the plate, B. The links, G, are united to the lever by a pivot joint, and also united to the plate, C, by a joint of the same kind attached to the inside shoulder of a setting screw, which works through a box, I, on the top of the plate. This screw increases or diminishes the distance between the top of the two plates.

OPERATION.—Place the article to be pressed between the two plates, as they now stand, and take hold of the lever, H, bending it down by the right hand towards the right side. This brings the two plates, B C, together, and as the pivot joint of the links, G, in the handle, is brought behind the pivot joint of the handle, at the top of plate, B, the power applied increases as the lever moves eliptically, until it is on a line with the fulcrum of the said lever and top of the plate. This press is a good invention; we have no doubt but it will soon come into general use, as it is exceedingly convenient and handy to use; and it exerts a far greater amount of pressure according to its size, than a person would at first sight suppose.

The inventor has taken measures to secure it by patent, and more information may be obtained from him by letter, addressed to Detroit.

IMPROVEMENT IN STEAM AND VAPOR ENGINES.



The accompanying engraving represents an improvement in working the slide valves of engines, which has been patented at home, and recently in Britain, by the inventor, Mr. Ethan Campbell, of this city (New York.) The engraving represents the invention as applied to a locomotive to work the steam expansively. The valves are two pistons, A B, fixed on the same rod, and sliding steam tight in the cylinder, C D, is a passage in the said cylinder, for the admission of steam from the boiler. E, is the valve rod, it is actuated by a cam arm, F, from the cross-head, which arm comes in contact with studs on the rod, E, during the stroke of the piston, at the proper time for cutting off the admission and escape of steam to and from the cylinder. The piston is represented as performing the stroke from right to left, the induction passage being full open during one half of the stroke. The arm, F, is just coming into contact with the stud, G, by which the valve rod, E, is carried a sufficient distance to close the induction port by the piston valve, A, and then it remains opposite to it; the stud, G, at its lower end, is then received into a groove, H, in the plate represented, which is secured to the frame of the engine. This groove draws down the stud, when the cam arm, F, slips its hold, and the main piston, P, in the cylinder, R, continues it downward stroke with the eduction passage of the main cylinder still full, the piston, B, having stopped short of the said passage. The arm, F, next comes in contact with the stud, K, towards the end of the stroke, which completes the movement of the valves, carrying them past both ports, and in a proper position for the reversed stroke of the engine. By this movement of the valve rod the position of the studs G and L is reversed, the stud, L, being carried into the highest part of the groove, H, and the stud, G, into the lowest, out of contact with the arm, F. A like action takes place on the reverse stroke of the arm, F, first striking the stud, L, and carrying the valve rod, E, as before stated, a sufficient distance to close the then induction port by the valve, B, remaining opposite thereto, the arm, F, slipping its hold of said stud, L, at that point. The stroke of the rod, E, is completed by contact with the fixed stud, M, when the motion will be reversed. The bricks, N N, are employed to strengthen the studs, G L, and prevent them from setting fast in the groove, H. O is a hand lever connected with the valve rod, E, to work the valves by hand when required. U is the connecting rod of the main piston rod, S. T T are guide rods for the slide of the arm, F. The claim for this improvement is the working of the valves to cut off at any portion of the stroke, and to prevent what is termed "wire drawing of the steam."

To Cook the Egg Plant.

The following mode has given satisfaction so far as we have known it tried. Cut the purple egg plant into slices a third of an inch thick. Put the slices on a plate, one over the other, with a sprinkling of fine salt between each layer, and lay a weight of three or four pounds on the top; leave them in this situation four or five hours or over night. The salt will form a liquid with the juice of the egg-plant, which will take out the bitter quality. The liquid should be drained off. Fry them brown in lard or butter.

The following is the mode of stewing the plant: Take the purple kind, stew till soft, take off the skin, mash it with butter and sweet herbs, grate bread over the top, and bake it till brown.

Washington Irving relates that Abdallah, the father of Mahomet, was so beautiful that "no less than two hundred Arab maidens died of a broken heart the night he was married to Amina."

A pretty good story we think.

Two carrier pigeons, taken out by Sir John Ross, who is in search of Sir John Franklin, have arrived at their homes in Scotland. They have flown 2,000 miles.

The embroidered muslins of Switzerland are to be prohibited in France, because they interfere with French manufacture.

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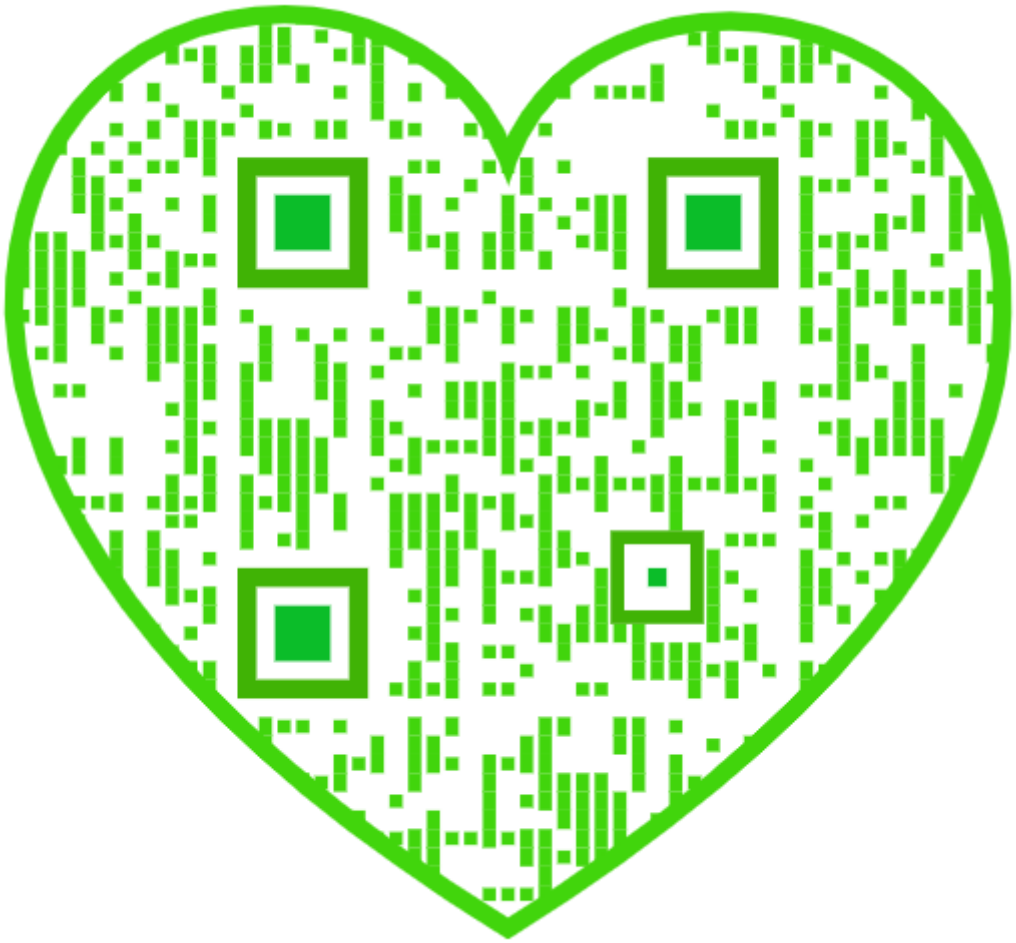

Miscellaneous.

Fair of the American Institute.

SILVER MEDALS AWARDED.—(CONTINUED.)

T. H. Witherby, Milbury, Mass., chisels and drawing knives.

J. W. Farr & Co., New York, planes.

John B. Wickersham, New York, wire railing.

Long & Davenport, New York, augers.

H. G. Dubois, Brooklyn, L. I., house painting.

D. Benson & Co., Buffalo, N. Y., best piano forte.

J. H. Grovesteen, New York, piano forte.

T. Gilbert & Son, Boston, Mass., pianos, with Æolian attachment.

Langenhem & Co., New York, best Talbotypes.

Louis Bail, New York, picture and portrait in plaster.

G. B. Bouton, New York, statue of wood.

J. Andrews, Rahway, N. J., best wood engraving.

Brady, D'Avignon & Co., New York, best lithographic prints.

M. A. & S. Root, New York, best daguerreotypes.

J. Gurney, New York, second best do.
Meade & Brothers, New York, do. do.
Harrison & Holmes, New York, do. do.
D. E. Gavit, Albany, N. Y., do. do.
C. M. Barey, New York, do. do.

George R. Townsend, Springfield, Mass., best patent leather and double soled boots.

J. R. Pitkin and others, New York, pegged shoes, made by hand and machinery combined.

Benjamin Shaw, New York, best ladies' boots and shoes.

George Kirk, Brooklyn L. I., best weavers' reeds.

J. B. Sargent, New York, best machine cards.

E. J. Skerritt, Pompton, N. J., best bobbins and spools.

McDonough & Hammett, Philadelphia, best sofa bedsteads.

George J. Colsey, New York, best portable desk.

N. P. Kimball, New York, kiln-dried pine doors.

McGregor & Morris, New York, American dressed hemp.

Bates & Jordan, Boston, Mass., best shell combs.

John Fenn, New York, ivory tablets and fine combs.

Clyde & Black, New York, best umbrellas and parasols.

John H. Whitlock, Troy, N. Y., best cast and turned Britannia ware.

A. C. Farrington, Newark, N. J., zinc ore, zinc metal, spoons, &c.

Filley & Mead, Philadelphia, nickel silver ware.

Charles P. Caldwell, New York, best whips, &c.

John D. Chevalier, New York, best dentists' lathe.

F. Meyers & Co., Philadelphia, best standards, scales, weights, and measures.

W. Watkins & Son, Bristol, Conn., plumb and level.

H. Chatain, New York, best machine mouldings.

L. Cantel, New York, best trunk and hat case.

Van Blarcom & Dixon, Paterson, N. J., second best double harness.

Van Blarcom & Dixon, Paterson, N. J., second best single harness.

L. I. Lloyd, Albany, N. Y., a set of single harness.

Geo. Fisher, Raleigh, N. C., saddles.

L. T. Boland, New York, best ornamented crests.

P. S. Duval, Philadelphia, printing in colors.

Joshua Shaw, New York, glaziers' diamonds.

Asa Willis, New York, safety window shutters.

A. D. Olmstead, New York, improved galvanic battery.

John W. Greaton, New York, pencil and pen cases.

J. H. Capel, Brooklyn, L. I., drawing—"the disordered table."

Ralston & Philips, New York, life preservers.

North & Dennis, Fly Creek, Otsego Co., N. Y., best manure and hay forks.

Stephens, Keys & Co., Norfolk, Conn., planters' hoes.

J. T. Grant & Co., Junction, N. Y., best farming mill.

B. D. Sanders, Holiday's Cove, Va., grain cleaning machine.

Reuben Daniels, Woodstock, Vt., self-sharpening straw cutter.

Mrs. Mary Cleveland, New York, best shirt.

Brodie & Bell, New York, best ladies' sacks and mantilla embroidery.

Mrs. W. Simmons, New York, best case of bonnets.

C. Linhen, New York, best ornamental hair work.

Miss C. Nichols, New York, flowers made of floss silk.

Leon Guillaume, New York, best artificial flowers.

Edmonds & Gill, New York, best wax fruit.

Mrs. S. A. Reed, New York, best shell work.

E. Combs, New York, best regalia.

Mrs. Reisky, New York, best chenille embroidery.

Miss Matilda Schmahl, New York, best single stick worsted work.

Miss C. S. Braisted, New York, best double stick worsted work.

Miss Cleveland, Conn., best raised worsted work.

Miss G. De La Tour, New York, embroidered cushion and handkerchief.

B. Kraischer, New York, best fire brick.

Hart H. Leavitt, Boston, Mass., best sewing machine.

F. Harris & Sons, Brooklyn, L. I., second best smut machine.

D. D. Badger & Co., New York, second best large engine lathe.

A. Inslee & Co., Newark, N. J., best 2d size engine lathe.

Thomas J. Tindall, New York, best 3d size engine lathe.

Alex. Stiven, New York, second best force pump.

Sherwood & Fitzgerald, New York, best iron safe.

Chas. Ross, Rochester, N. Y., second best portable mill.

Robert Wilson, Houston, Texas, best brick moulding machine.

Myers & Gardiner, New York, best pump.

I. A. Fay, & Co., Keene, N. H., boring and morticing machine.

T. F. Strong, New York, best filters.

F. H. Bartholemew, New York, best hydrant.

Abner Chapman, Fairfax, Vt., best water wheel.

New Jersey Consolidation Mining Company, second best specimens of iron.

Joseph Golder, New York, second best anvil.

H. Miller & Co. Astoria, L. I., best lifting jack.

Lowell Machine Shop Company, Lowell, Mass., best upright drill.

E. & T. Fairbanks & Co., St. Johnsbury, Vt., depot scales.

Duryee, Forsythe & Co., New York, depot scales.

A. W. Whitney, Woodstock, Vt., best tinner's machines.

Wm. Lennox, New York, patent rolling mill for irregular shapes.

E. & S. D. Gould, Newark, N. J., gear cutting machine.

T. O. Leroy & Co., New York, block tin pipe.

Ransom Cook, Saratoga Springs, blast pipe or double tuyere.

I. A. Fay & Co., Norwich, Conn., sash moulding and planing machine.

Noyes & Hutton, Troy, N. Y., patent spring iron bedsteads.

Moody & Marsh, Bridgeport, Conn., flour bolter.

(To be Continued.)

American Labor and Machinery and Foreign Labor, &c.

The article which appeared in our columns on "Our Manufactures," also various newspaper extracts which we have seen, convince us that the remuneration for labor in England and the condition of the people there, are not well understood by our people generally. The following is an extract from an address to Congress on the subject.

"The average earnings of the workers employed in the linen factories at Belfast (Ireland) are $1,44 per week; in the cotton mills of Scotland, $1,80; in the woollen mills of Leeds, (England) $2,16; in the two largest and most expensive cotton mills of British Manchester, $2,88. But the wages paid by the Lawrence Manufacturing Company at Lowell, for a quarter of last year, amounted to $67,833 for an aggregate of 16,829 weeks' work, equal to $4,04 per week. (The workers board themselves in each case.) This is believed to be below the average earnings of all the free labor employed in American factories, yet it is one-third higher than the *highest* average paid in a British factory, and considerable more than double the average wages of British factory labor.

In metals, the contrast is still greater. The average earnings of American iron-makers and workers is nearly or quite $1 per day, and was higher under the influence of the Tariff of '42. Du Frinoy's Annals of the Mines, in its account of the author's tour of observation through the mines and metal works of England, gives 50 cents as the highest wages paid to the best workmen in the mines, of smelting furnaces, 36 cents per day, (544 francs per annum) as the average wages of the better workmen in three large localities, with 25 cents on the average earnings of the common and more numerous class of workmen. The average cannot exceed 31 cents per day, or about *one-third* the earnings of American iron workers."

With respect to the payment of factory operatives, we cannot at present say whether it is correct or not, but in respect to the workers in iron, we will present a very different story. A commissioner named Tremenheere, appointed, the British Government to enquire into the condition of the mining population of England, has recently made his annual report. Let us hear what he says:—

The three capital vices of our mining population are sensuality, brutality, and insubordination. The first two are manifestly the growth of ignorance. It would hardly be believed that the coarse, rough men, working in the South Staffordshire mines, without knowledge of the faintest tinge of refinement, are clamorous customers for all kinds of gastronomic delicacies, while they have meetings by night to indulge in cruel sports forbidden by the law. Early and choice vegetables, poultry, port wine "drunk out of tumblers and basins," &c., together with pleasure trips in jaunting cars, and a general habit of gambling, consume their whole high wages.—Crowded dwellings, the utter absence of all cleanliness either personal or domiciliary, and a brute-like ignorance of mind and ferocity of manners, form striking contrasts to this lavish expenditure on pleasures that usually indicate a certain advance in social refinement. In South Staffordshire they only mark more pointedly a deeper demoralisation, and a condition of grosser ignorance, than can be met with in any other class of laborers throughout the kingdom. All the mining districts are, it is true, not equally bad. We find among the miners distinct shades of moral feeling, from the deep black vice to the brighter hue of steady improvement. In good times the laborer in the iron works gets as much as 50s. a week; and the coal miner has from 20s. to 30s., and seldom less than 16s. a week, even in slack times—whilst his family earn from 10s. to 20s. more. Instead of schools and libraries, cleanly and well-drained houses, domestic comforts, and rational enjoyments, we find nothing but an extravagance, drunkenness, and utter want of decency and morality in daily habits, and an ignorance that is appalling. There is also an obstinate idleness that refuses to work more than is necessary to procure certain luxuries. Such is the curse which attends even high wages, when paid to ignorant men for the labor of a few hours. All healthy impulse to continuous industry is destroyed. Few among educated men have so much energy as to love occupation better than sensual gratifications, indolence, and pleasure—and least of all can we expect this from the uneducated miner. He does not care to work longer than is requisite to supply his animal desires. Do what he will, he cannot eat more than a certain quantity even of the daintest food, nor drink beyond the point of drunkenness. If he gets enough to enable him to indulge in these two gratifications, and to enjoy the day's rough pleasure in the jaunting car and the night's noisy excitement at the gambling table, why should he labor for what to him would be a useless superfluity? Foresight, frugality, the improvement of his home, the purchase of a small garden—all these imply qualities superior to the mental *status* of the South Staffordshire miner; and such will continue to be the case until some effectual steps are taken to raise him out of his present low moral condition."

Here is a very black picture, indeed, but not because of low wages. Men of darkened minds, ignorant, and debased in feeling, cannot render themselves comfortable nor happy with the very highest wages. Religion and education alone can elevate such a people. It is not from the abundance of good things that happiness proceeds, but in the right use made of them. The above extract relates to the miners of Staffordshire, Northumberland, Durham, and Monmouthshire, Brecknockshire, and Glamorganshire, in Wales. We take it from a British work, consequently it is no dark drawn picture of ours, but it is one which will make many of our people change their opinions; for, without doubt, if the old men among these people become wretched and poor, they are to blame themselves, not the government, as too many of our people are liable to think.

New Steamship.

The Africa, a new steamer of the Cunard Line, arrived here on last Friday, the 8th inst., after a passage of 12 days and 18 hours; her passage has been longer than the last one of the Asia, by 1 day and 19 hours; she is the counterpart of the Asia. She is 267 feet long and 40 in breadth of beam. Her engines are 800 horse power (calculated) and she can carry 900 tons of coal in her bunkers. She carries a new invention, termed a "fog horn," in which to fire a musket and carry sound to a great distance. She is finely fitted up, but does not look so gorgeous as the Atlantic or Pacific, in her decorations. The panel paintings are by Mr. McCallum, of Glasgow, and are beautiful. The engines were built by Robert Napier, of Glasgow, and are of the finest workmanship, models of strength, arrangement and beauty. Her first passage has not been a good one. We don't like her bow, it is too bluff to suit our taste.

The Late Fair of the American Institute.

The number of visitors, as well as the receipts, at the late fair at Castle Garden, was larger than on any previous occasion. The receipts were $21,988, from which must be deducted about $15,000 for expenses, paid by the managers. It is estimated that there were not less than 320,000 visitors. Of this number, about one-fourth paid for tickets of admission. The residue were admitted on the tickets of members, exhibitors, and on invitation from the Board of Managers.

There has been a just and general feeling of dissatisfaction expressed in respect to the late fair and its foggy management.

The celebrated Locke, when in France, in 1675, mentions in his journal, "parasols as a pretty cover for women riding in the sun, made of straw, something like the tin covers for dishes."

A Steam Company is on the eve of being formed at Constantinople for towing vessels through the Bosphorus and the Dardanelles. The capital is £150,000, in 1,500 shares of £100 each. The Sultan and most of the Ministers are on the list.

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For the Scientific American.

The Voltaic Battery.---Precipitation of Metals.

NUMBER v.—(Concluded.)

A volume might be written on the black deposit, and the various modes of preventing it, but it will be sufficient to give the practical method of correcting it. The operator provides six coils of covered copper wire, the first one to contain one yard, the second two, the third four, and so on ; these coils are interposed in the battery circuit until the battery is brought to a state that will enable it to make the work gild clear ; after this point has been attained, any thickness of metal may be deposited.

The length of time required to attain a given thickness of gold, will depend altogether on the rapidity of the battery action, and this must be regulated to the strength of the solution, and also its temperature With a hot and very strong solution, kept briskly acetated, the thickness of ordinary letter paper can be attained in ten minutes.

Some metals will not receive the deposit of gold, or if they do receive it, the deposit does not adhere ; such metals must be first coated with copper or silver before gilding.

As the solution is deprived of gold it becomes less dense, and rises to the surface, hence there is always an ascending current of exhausted solution around the article being gilded. Any projecting ledge which may retain this exhausted solution will blacken, although the body of the work may gild clear. Continued agitation of the solution will go far to obviate this, but will not entirely prevent it.

The first deposit of gold has all the polish of the article receiving it, but as the thickness of gold increases, the polish is lost, and ultimately, if the process has been conducted very slowly, the surface will attain that beautiful dead appearance called frosted gold.

It is well, in depositing a thick film of gold, to take the article several times from the bath and brush it well with chalk, on a stiff brush ; this removes the incipient roughness, and causes the gold to be deposited very evenly ; this should invariably be done after the least appearance of the black deposit.

The solution used in gilding may work very handsomely when new, but in a few days, if exposed to the air, it will become deteriorated, and ultimately, if continued exposed to the air, it will not work at all. When the deterioration has gone so far as to be troublesome, the solution may be washed as follows :—add dilute sulphuric acid until the brown deposit of cyanide of gold ceases to appear, then wash well the precipitate and re-dissolve in cyanide of potassium ; this will generally restore the solution to its pristine qualities.

The solution, when not in use, should be kept in a well corked bottle.

As the cyanide of potassium, when dissolved in water, forms prussic acid, which is the most fatal of all poisons, too much care in keeping the gilding solutions from the reach of children, and others unacquainted with its nature, cannot be used ; this substance is not only poison when taken internally, but by merely handling the articles when taken from the bath, the fingers sometimes become badly ulcerated. There is no necessity to get the solution on the hands ; there should always be a vessel of water to rinse the article as soon as taken out. When the amount of solution thus transferred to this vessel becomes of value, the cyanide of gold, or other metal, may be recovered by adding sulphuric acid, and after collecting the precipitate, it may again be restored to the bath.

New Jersey Elections and Railroad Monopoly.

The democracy have carried everything in the recent elections in New Jersey, and the old whig monopolists have been entirely defeated throughout the State. It is now expected that a great and successful effort will be made in the next Legislature of that State, backed by popular opinion, to throw off the railroad monopoly, or to modify it at least. We want, however, to see no violation of vested rights. Let justice be done to all parties, and, while monopoly is abolished, do not injure the just rights of property.

Booth's Patent for the Reduction of Gold.

[Concluded from page 59.]

After stopping off the steam, a sufficient repose of the liquid of from one to several hours will allow all the metallic gold and chloride of silver to collect at the bottom of the vessel.

The liquid above the precipitate is then decanted, or drawn off by a syphon or some other convenient manner, and run into a suitable vat, to be further treated, if considered desirable, as will be described below.

The precipitate may be once or twice washed in the same vessel used for solution and precipitation, by pouring water, allowing the precipitate to settle, and then decanting or drawing off the liquid ; or it may be directly thrown upon a filter and then washed with water until the water passes off colorless, and gives a neutral test.

The advantages of this mode of precipitation are economy in the use of the cheap material of copperas, rapidity of execution, complete precipitation of all the gold found in the solution, and in such a state that it will yield a soft and malleable gold, free from brittleness, when it is subsequently fused ; the avoidance of all danger of loss which would result from drawing off or decanting a solution of the gold from the chloride of silver, or of transferring it to another vessel.

By this method of precipitation the copperas or proto-sulphate of iron, is converted into a mixture of sesqui-sulphate and sesqui-chloride of iron, which are in the liquor drawn off.

Copperas may be again obtained from the liquid, after being drawn off, by putting into it bars or scraps of metallic iron, by which the sesqui-oxide of iron is reduced to protoxide and then chrystallizing out the copperas, and adding either the chrystallized copperas or the concentrated liquid without chrystallization, to the next solution of gold in order to precipitate it.

Although there is scarcely any economy in re-preparing copperas chrystalized or dissolved from the solution, yet it may have this advantage, that if the least particle of gold or of chloride of silver, through carelessness in operation or through accident, should have been drawn off with the liquid, it will then be recovered.

But any possible loss of gold in this way, or of chloride of silver in solution, may also be entirely obviated by drawing off the liquid in to a large vat, and then diluting it largely with water, whereby chloride of silver will precipitate, and will collect together with the gold at the bottom of the vessel after sufficient repose.

The process of dissolving out the chloride of silver and other insoluble chlorides, is thus :—The mixed metallic gold and chloride of silver are either partly washed in the solution vat, or wholly washed on a filter and then thrown into a wooden vat lined with lead.

Granulated metallic zinc, or scraps of iron, to the amount of about one-third of the quantity of silver, and other metals forming insoluble chlorides originally in the gold, is then thrown into the lead-vat, and water and sulphuric acid are added, and the whole is occasionally stirred.

The chloride of silver is thus reduced to metallic silver ; the gold is not attacked, and the excess of zinc or iron, if any, is dissolved out by sulphuric acid.

If iron has been used to reduce chloride of silver, the solution of copperas thus obtained may be used to precipitate another solution of gold.

After drawing off the solution of zinc as closely as convenient from the reduced silver and gold, the latter are thrown upon a filter and thoroughly washed with water until the water ceases to give an acid re-action. The mixed metallic gold and silver are next treated in a vessel of glass or stone ware, by pure nitric acid, which dissolves out the silver and other metals, if present, and leaves the gold

By drawing off the liquid and filtering and washing the remaining gold, the gold is separated from silver and other metals, if present. The gold is melted in the usual manner. The silver is precipitated from its solution by common salt, as chloride of silver, which is reduced by zinc or iron and sulphuric and muriatic acid, as in the usual parting process.

Instead of dissolving out the reduced silver by nitric acid, it may also be dissolved out by heating the mixed silver and gold with oil of vitriol, in cast iron vessels. The solution of silver is precipitated by common salt or metallic copper, according to usual known methods.

Although I prefer and claim as part of my invention, the use of vessels made of wood for making solutions of alloyed gold, yet vessels of porcelain, stone ware, or glass, may be used, which may be heated by steam, in a a water bath, in a sand bath, or over the naked fire.

Moreover, the form of the vessel may be varied, it might be made square, oval or round ; it may be shallow or deep, but I prefer the form that I have described.

The solution of gold may also be effected in a similar manner to that above described, in vessels of wood, as follows :—I take one part of alloyed gold, about three parts of strong muriatic acid of commerce, and three-fourths of one part of nitrate of potassa, or one half of one part of nitrate of soda.

I put the salt and gold, with a little water, into a wooden vessel like that before described, and pass steam into it ; I then add about one-third of the muriatic acid, still heating it, and after that add the remaining two-thirds of the muriatic acid gradually until solution is effected, as before.

The precipitation of metallic gold, reduction of chloride of silver and dissolving out the metallic silver and other metals, are effected as before described.

Vessels of porcelain, stone ware or glass may also be employed in this variation of the process, and heated in the manner described. It is not necessary that the salt should be first put into the vessel, for the whole of the muriatic acid may be put in at once, and steam applied until it is well heated, and then nitrate of potassa or of soda gradually added.

The mode of dissolving the gold may be further varied by putting one part gold and one part common salt, into a vessel of wood, porcelain, stone ware or glass, with a little water, heating the whole, and then adding strong nitric acid gradually until two and a half parts of nitric acid have been added. The subsequent precipitation of metallic gold, reduction of chloride of silver, solution and separation of metallic silver, are the same as have been described. Another known method of dissolving gold may also be employed by the use of a mixture of muriatic and nitric acids, which process requires the use of vessels of porcelain, stone ware or glass. Or if wooden vessels are employed, muriatic acid may be first put into such vessels, heated, and nitric acid gradually added.

The subsequent steps of the process are the same as have been described. The above processes may be still further varied by the use of chlorate of potassa instead of nitrate of soda or of potassa.

The second stage of the process—the precipitation of metallic gold in the solution, may also be effected by adding to the solution containing one part of gold, one part of sugar, molasses or starch, and a quantity of carbonated or caustic potassa, soda or caustic lime sufficient to super-neutralize the free acid, keeping the whole in a boiling state until all or nearly all the gold is precipitated.

If the precipitation be not immediately complete, it will complete itself by standing for some time ; the liquid is drawn off from the gold after settling, the precipitate is washed and then treated as above described for the separation of gold and chlorides.

The third stage of the operation may be so varied that the chloride of silver and other insoluble chlorides, are directly dissolved out from the metallic gold by any convenient solvent, such as hypo-sulphate of lime or of soda or caustic aqua ammonia. The washed gold is melted as usual. The silver is obtained from the solution by known methods, and if it contains gold they may be separated by nitric or sulphuric acid.

Some of the advantages of this invention for refining alloyed gold are—that the largest quantities may be operated upon in a shorter time than is now practicable, when acids alone are used—that this is the cheapest known method of refining gold, as the materials or chemical agents employed in this invention are of less cost than those used in any known plan,—that the apparatus is one of easy and economical construction.

That the cost of previously preparing muriatic or nitric acid, or both, may be saved by the use of the salts from which these acids are generated, instead of the acids themselves. That the process under this invention may be conducted in cities and densely populated places and districts, without inconvenience or injury to the inhabitants ;—that they will yield a soft and malleable gold, entirely free from silver and other metals, which is not the case in the usual parting methods. That this invention obviates the loss of interest attendant upon the keeping a large amount of silver on hand for the purpose of refining gold as is required in the usual processes ; for in my invention the use of silver is not required.

That by preventing the too rapid generation of volatile acid, all waste in that article is avoided, and the workmen are enabled to proceed in their labors without any injury from the acids.

Besides all these advantages, the gold when refined by this invention, is left in a suitable soft state, free from all brittleness, and ready at once for alloy for coining, which is frequently not the case with the known processes.

I do not claim the solution of gold in a mixture of nitric and muriatic acids, previously prepared, nor the methods of precipitation by copperas, nor by sugar and alkali, nor the reduction of chloride of silver by zinc and acid, unless the solution and precipitation be made in the same vessel without transfer. Small quantities of gold have been refined by a mixture of nitric and muriatic acids, but this method has not been carried out on a large scale, and has been deemed impracticable to any great extent on account of the cost of these acids, the noxious fumes arising from the process of solution and the liability to loss in carrying or transferring a solution of gold.

In the usual sorting process, nitric acid always leaves small quantities of silver and other metals, when they have been melted with gold, unless a very large excess of acid is employed, and in that event there would be no advantage in the process, as it would be too costly in manufacturing on a large scale.

Family of Patrick Henry.

The distinguished Virginia orator, Patrick Henry, had five sisters, Jane Meredith, Anne Christian, Lucy Wood, Susan Madison, and Betsey Russell. The last mentioned lady was the grandmother of the Hon. W. C. Preston, President of the South Carolina College.

William Henry was his only full brother.

Patrick Henry's mother was Sarah Winston. His father was John Henry, of Aberdeen, Scotland. John Henry's mother was Jane Robertson, sister to Dr. William Robertson, the Historian.

[If the above is correct, Lord Brougham is nearly related to Patrick Henry's descendants. Two such orators from the same race is not to be found in all history.]

Emigration.

So large is the yearly emigration from Great Britain to this country and other places, that many will suppose the population of that Kingdom must be gradually falling off in numbers. Mr. Laing in his "observations on Europe," says that there are about 28 millions of inhabitants in Great Britain. That the regular annual increase is 420,000 ; whereas the greatest amount of emigration being in the famine year 1848, was only about 270,000. From this annual addition to an already overcrowded people, where wretchedness increases or elbow-room grows scarce, Mr. Laing argues that at some period not distant, the present organization of the British Government must come to a violent end, unless a peaceable revolution shall provide a speedier remedy.

[The best remedy for the evils of overcrowding the British Isle, is, to take some money from their well paid officials, and assist in the formation of colonies in their distant possessions—not to send out beggars, but yeoman

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New Inventions.

To Keep the Dust out of Railroad Cars.

We had lately the pleasure of inspecting an invention of Mr. N. Goodyear, the inventor of india rubber improvements, for preventing passengers from being annoyed with dust and smoke in railroad cars—two great evils. On the roof of the car a number of ventilators are arranged, so as to allow the air to pass freely into the car when it is in motion. The mouths of these ventilators are covered with a fine wire cloth, through which the air circulates freely, but which effectually stops all cinders and other dirt. In each window of the car is placed a sash of blinds, constructed of plates of glass four inches wide. These blinds are so arranged that they are all moved by a connecting rod, in the same manner as ordinary window slats are opened or shut. The air, coming through the ventilators, passes with a gentle current out of the blinds, or "car-dusters," as they are called, the outward current thus formed, effectually preventing a particle of dust entering the car, and the outside current, formed by the motion of the car, carrying the dust to the rear.

The course of the current is established on the philosophical principle of presenting the closed edges of the slats or blinds of glass, not the same as window blinds, but in the contrary direction—the slats vertical, so that the edges are presented like a layer of shingles, with the wide ends to the back of the cars. The current of the atmosphere, therefore, formed by the velocity of the car, impinges on these slats, forming a partial vacuum at their back edges outside, and this forms a current—for every window—from the inside to the outside, consequently no dust rushes inside to soil the clothes and to stifle passengers.

New Printing Machine.

The recent invention of Jeptha A. Wilkinson, of Providence, R. I., of a rotary printing machine, different from any other now in use, promises to work a great revolution in printing. The motions of the press are rotary, and the type being placed on cylinders, each print a separate side of the sheet. The paper is only cut as it comes from the press, being placed on the press for printing in large rolls as it comes from the mills, and as many thousand yards in length as may be desired. The paper being taken from the mill, and of the necessary degree of dampness, is printed, cut off into sheets, and folded by the press at the rate of 20,000 sheets an hour, requiring only one man to place the rolls upon the press and remove the papers as printed, cut and folded by the machine. Its cost is less than a double cylinder Napier press, and it is said to possess great advantages over any other press in its effect upon the type.

[We copy the above from an exchange, and we must say that it appears to be high boasting: 20,000 sheets per hour make 5 5-9 revolutions per second, or 333 3-9 per minute—pretty quick travelling for a printing press. Rotary presses, with curved forms of type, are not new, but there may be many important improvements made by Mr. Wilkinson.

Improved Mode of Fastening Scythes in the Snaths.

Mr. Oliver Clarke, of Medina, Medina Co., Ohio, has invented and taken measures to secure a patent for a very beautiful contrivance to fasten a scythe in its snath. By his plan the scythe can be set out and in with any proper curvature to the heel as may be desired; the point can also be set to any angle desired. The fastening and arranging the position of the scythe, is done very quickly, and is quite different from the common plans.

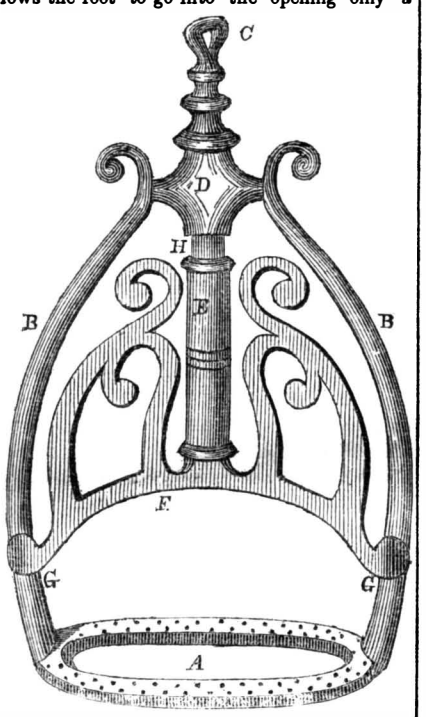
A Patentable Subject.

The question is often asked, "If A gets a patent for something which has long been in public use, can he prevent B from using that which has long been public property?" No. If any invention has been in public use for two years prior to making application for a patent, it becomes public property, and an after patent is of no consequence. To make a patent valid it must be for an improvement that is new and useful,—"but no patent will be invalid by reason of the use or sale of the invention prior to the application for a patent, except on proof of abandonment of the invention to the public, or that such purchase, sale, or prior use, has been for more than two years prior to such application for a patent." This is law, as contained in Sec. 7, Act. 1839.

Post's Patent Stirrup Iron.

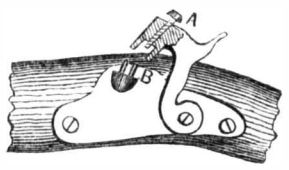
This improvement is the invention of Mr. Nathan Post, of East Cleveland, Ohio, and was patented on the 18th of last June. A silver medal was awarded to it at the late State Agricultural Fair, held in Albany, and a gold medal by the American Institute, but not until its merits had been hammered into the heads of the Committee, by a well-merited rebuke for their first decision, in reference to its importance.

This figure is a semi-perspective view. The improvement consists in a spring guard, F, suspended between the two sides, B B, which allows the foot to go into the opening only a



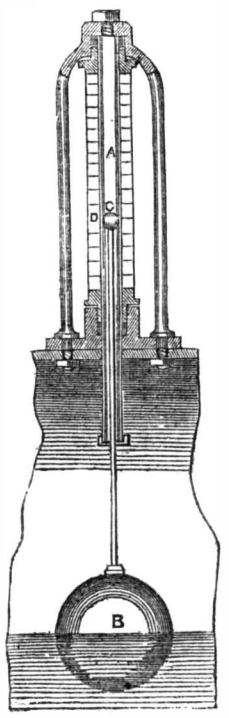
certain distance, and to rest firmly on the base, A. The guard, F, has a centre tube, E. This screws on to another tube, H, and can be thus elevated and lowered to increase or diminish the space between A and F. In the inside of the tube, H, there is a flat spring secured inside to the shoulder, D, and this acts upon the tube, E, to bring the guard back to a vertical position, when it is drawn out from the sides. C is the eye. The shoulder, D, has bearings in the sides, B B, to allow the guard to oscillate. G G are to two guides of the guard abutting against the sides, B B; it cannot therefore be drawn but towards the rider, the side of which is now exposed towards him. In riding, if the equestrian is thrown off his horse, it is impossible for his foot to stick in this stirrup, for the action of the guard is, to throw the foot out of the stirrup also. This invention has been admired by every person who has seen it, and cannot fail to come into universal use. More information may be obtained by letters addressed to Mr. Post, as above directed.

Safety Gun Hammer



The accompanying engraving represents a new safety percussion gun hammer. Its construction is very simple and easily understood. The figure will convey at a glance a just idea of its nature and construction. The whole difference between it and the common hammer and nipple, consists in making the hammer cap a little wider than the common one, so as to cover the percussion cap on the nipple without touching it, and to strike and rest on a small shoulder of the nipple. In the hammer cap there is a set screw, A, running through it. This screw has its lower face smooth, and is the hammer to strike the percussion cap on the nipple, B. By raising this screw, turning it to the left, if the hammer should fall on the nipple, the percussion cap will not explode, while by a single turn of the screw, or more, according as it is made, the screw will then strike the cap and explode it. This hammer can be carried through bush and brake, down close around the nipple, when the screw, A, is up, and no danger need be anticipated. Yet for all this we must say that the safety depends on the care of the person carrying the gun, for he may be too reckless to fix his screw hammer. There are some people who cannot carry a gun for thirty minutes without jeopardy to themselves or others; while there are other persons who can carry and use firearms continually, with the utmost safety, so far as accidents by carelessness are concerned. This improvement was lately registered in the London Patent Office, but is free property here.

Boiler Water Gauge.



This is a very convenient guage for a steam boiler encased in brick work, when the ordinary gauge cannot well be applied.

A, is a glass tube fixed in the usual way, the top being supported by the junction of a couple of pillars bolted to the top of the boiler, and the copper ball, B, carries a rod with a small knob, C, at the top, which, passing up the interior of the tube, indicates the height of water on the index, D, graduated in inches.

When a feed-regulating apparatus is required, the float and balance-weight is of course desirable; but when this is not wanted, the enclosed plan might be adopted with advantage.

This gauge is common property, and can be used by any person. It is so simple that further description would only serve to "darken counsel with words."

Improved Brick Making Machine.

Mr. Joseph Grant, of Providence, R. I., has made some valuable improvements in "Rotary Brick Machines," for which he has taken measures to secure a patent. The clay in the moulds is acted on by rotary die pistons, which are so constructed that they impress the face of the moulded clay with a true and even surface. This has always been considered a great desideratum, for rotary brick machines have not heretofore been constructed to squeeze the clay into the moulds with projecting dies, so as to leave an even face on the moulded material, owing to the unequal action of the pressers, while revolving. There are some other good combinations in this machine, which could not well be explained without engravings.

Power's Statue of Eve has been purchased by Prince Demidoff, of Russia, at the price of £700, which is one hundred pounds more than was to have been paid for it by Mr. Robb, of New Orleans, for whom it was originally made.

Stewart's Rotary Engine.

As mentioned by us last week, we will state a few particulars relative to Mr. Stewart's engine, communicated to us by himself.

Mr. Stewart received a patent on the 1st of October, 1841, for improvements on Mr. Murdock's Engine, patented in 1799. The improvements consist of two parts, first—confining the steam to the wheels by a cap and two cheek pieces, so formed as to embrace but a small portion of each wheel, thereby preventing the wheels from jamming when in any way thrown from their true position. Second, The method of using high pressure steam on it, to get what is termed "double action," as mentioned in our last number in describing the engraving. He states that he generally gets more work out of one of his engines used in a saw mill, with the same quantity of steam, than can be got out of a cylinder engine. A saw mill, with his engine, near Gallatin, Tennessee, has a boiler only 32 inches in diameter, 22 feet long, without flues, makes all its steam with green saw-dust and slabs, and feeds itself. Messrs. Clark, Renfrew & Co., of the Eagle Foundry, St. Louis, are manufacturing these engines, and Mr. Stewart is superintending their construction. He promises the public to make the greatest engine ever produced.

Communications should be addressed J. A. Stewart, St. Louis.

Maryland Institute of Mechanic Arts.

As the Third Annual Fair of this Institute is now closed, I for one cannot but feel gratified and proud at its success, and the general satisfaction evinced by exhibitors, in regard to the manner in which it was conducted. It is not for me to say how well and how justly the prizes were awarded, or to enter into details respecting the nature of the articles, machines, &c., which were exhibited. I can only say, that the members of the Institute feel satisfied, because they have endeavored to do their duty, and have met with nothing calculated to make them believe that any exhibitor was dissatisfied or neglected.

Of all the machines exhibited, none attracted so much attention as the "Sewing Machine," the one, if I remember aright—illustrated on the first page of Vol. 5, Scientific American. When it was in operation, a crowd of ladies and gentlemen was always around it. I wish that the women folks had as perfect a machine for washing as this one is for sewing.

The only scales exhibited were the "patent scales" of Mr. Jesse Marden, of Baltimore, who appeared to have driven off all competition. Among a number which he exhibited, the "Dial Platform Scale," which indicated the weight by a pointer on the dial plate, dispensing with weights, appeared to be a meritorious invention. This scale is made of different sizes to suit stores, &c. A rod passes up the hollow column which supports the dial, which at one end is connected with the platform and at the other with a rack and pinion, to which the hand in the dial is fastened; the slightest pressure on the platform will move the hand instantly, indicating precisely the weight. It was awarded a gold medal. Mr. M. is a first rate scale maker.

I might fill sheet after sheet with descriptions of machinery, &c., but it is no easy matter, without diagrams, to convey a just idea of such things.

Only one thing occurred to mar the enjoyments of the Fair, and that was a most afflicting accident, viz., the death of a young man named Jas. McLanahan, who was killed by the falling of machinery at the beginning of the Fair. No blame is attached to any person.

I send you a printed copy of the able Address delivered by Campbell Morfitt, Esq., at the opening of the Fair.

A Member.

Baltimore, Nov. 9th, 1850.

The English population of Madrid, Spain, increases in a remarkable degree. The Aranjuez railroad, the gas-works, the mines of Guadalajara, and various other industrial enterprises, afford employment to many of them.

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Scie tific American

NEW YORK, NOVEMBER 16, 1850.

Commissioner of Patents' Report.

Last week we presented an outline of the Report of Chief Examiner Page; this week we present that of Chief Examiner Fitzgerald. He states that he examined 666 cases, "a larger number than was ever before examined by one Examiner in the same length of time." The number of patents passed by him was 270, the number rejected, 460. "Many applications," he says, "after one set of claims have been rejected, are amended and returned for a new examination, upon new or amended claims, requiring the same labor on the part of the examiner [not quite, we think] as new applications." He also states that 400 cases, owing to re-examinations for amended claims, amount to 460—a little more than 1-6th of the whole—that is, every 600 applications amount to 700 examinations. Much of this examination is the fault of the Patent Office: many patents now in existence have had their claims rejected, re-rejected and finally granted. We believe that the Patent Office Examiners might save a great deal of trouble to themselves. Mr. Fitzgerald states that he rejected three applications for every four he examined. He believes that multitudes of inventors will still bring forward old inventions, owing to want of information on subject.

But one appeal, it is stated, has been taken from Mr. Fitgerald's desk since 1846: if reference, however, had been made to Mr. Trapp's invention for manufacturing barrels, the allusion would have been anything but pleasant. Mr. Fitzgerald has charge of five classes; 1st, mills for grinding, horse powers, regulators and mechanical movements generally. 2nd, carriages and implements of travel. 3rd, machinery for working lumber, such as planing machines and tools for working in wood. 4th, hydraulics and pneumatics, such as water-wheels, wind-mills and hydraulic engines. 5th, manufactured textile goods, and machinery for manufacturing fibrous textile fabrics, such as looms, carding and spinning machines, &c. Twenty-four patents were granted on mills, the principal one of which was for a strong artificial current of air driven in at the eye of the stone, in such a manner as to force the flour more rapidly through the mill than formerly. In reference to flour separators, the Report states, "Patents upon such machines are granted liberally, because slight changes in them, which would be of no importance in machinery generally, often produce marked results, and require contrivance instead of mere mechanical skill." This is a singular statement. Two good improvements for hanging mill shafts were patented; thirty-seven patents were granted on carriage contrivances, such as a tilting wagon, carriage axles, springs, and car couplings; eight of the patents were for improved wheels.

Thirty-four patents were for improvements on filters, windmills, water-wheels and blowers, and no less than six of them were for modes of raising and drawing water from wells. Eight patents were granted on pumps, some rotary and some reciprocating. But few patents were granted for water-wheels—it would seem that this field is almost entirely pre-occupied. Ten patents were granted on sawmills; twelve patents on turning machinery, and twelve on boring and mortising machines. Several patents were granted for stave machines, and no less than twenty on planing machines.

No less than about 90 patents were granted on machinery for the manipulation of fibrous and textile manufactures: five of them were on cotton gins, and the Du Bois machine, illustrated on page 404, Vol. 4, Sci. Am., is particularly mentioned. Five patents were granted for sewing machines, one of which is illustrated in the first number of our last volume. No less than 30 patents were granted on looms for weaving, some of which appear to be very complicated, but no less ingenious and good on that account. This Report of Examiner Fitzgerald is very interesting, and when we consider the multitude of patents granted for machines of a certain class like looms, the question arises, "can there be any other improvements added, are we not at the end of invention?"

The answer is an easy one: No. Invention begets invention, and oftentimes when we think, "can any improvement really be made upon this and that old class of machines?" the past rises up in the character of Hope pointing to glittering prizes yet to be awarded to future inventors.

Mr. Fitzgerald is a lawyer, and states that it is more difficult to become acquainted with science and art than with law. He is no doubt perfectly correct in this statement, but the influence of inventive and scientific men in the government is no more than a mite compared to a mountain, in comparison with that of the gentlemen belonging to the bar.

McCallum's Improved Railroad Bridge. Interesting Experiment.

On last Wednesday afternoon, the 6th inst., we witnessed at the Novelty Works, this city, a very interesting experiment, in testing the qualities of a new bridge invented by Mr. Daniel C. McCallum, of Owego, Superintendent of Bridges on the New York and Erie Railroad—the architect of the famous Cascade Bridge, on that road, and one of the best builders of bridges in our country. The experiment was conducted in the presence of some of the most practical scientific men in the country, such as Mr. Seymour, State Engineer, Mr. Horatio Allen, of the Novelty Works, and engineer on the unfinished part of the Erie Railroad; Mr. S. S. Post, engineer at Piermont, of the finished part of the Erie Railroad; Major Morrell, and a number of other distinguished gentlemen. The subject of experiment was a model 12 feet long, (10 feet long between the supports) made of three-quarter inch stuff, 21 inches deep at the centre, 12 inches deep at the abutments. The roadway was built about midway between the sides. It was levelled up with brick, to receive a superincumbent load of pig metal. This slender bridge was to be tested to its breaking point—in other words, loaded until it broke. The iron was weighed out, each bar balanced, and all laid in line on the bridge. A cord line was run from abutment to abutment, along the bottom of the lower string, to indicate every change of position the beam would assume—to see how it would behave itself. The iron was piled on until the slender but sturdy bridge appeared like the famous dwarf in the Arabian Tales, who walked about carrying for his armour a tremendous iron bar on his shoulder. The metal was laid on until 12,000 lbs. arose in a pile above it, still there was no sign of breakage, nor did it give way until 2,000 lbs. more—14,000 altogether—were laid on. It then gave way in the middle, leaving the abutments perfectly sound, a new result, and a desired one, developed, to the great satisfaction of all present. The principle of the bridge is a new composite beam of a straight under string, or chord, united to a top camber eliptical beam by angular thrust braces, angular counter braces and tension rods, the panels being divided by perpendicular posts radiating from the centre of the chord. The camber is not the same as the arch commonly used, by being placed on the side of common truss bridges, but is united as described, making the combination a new one entirely, and one to remedy the evils we are about to speak of. Railroads have developed and called into requisition new combinations to meet new exigencies. The New York and Erie Railroad, above all others, with its numberless bridges, broad gauge and huge locomotives, has afforded great opportunities for testing various kinds of bridges, and this bridge is the result. The effect of the load on the camber is to deflect it, which has a tendency to extend in the direction of the abutments, thereby calling into instant action the thrust braces, with an upward pushing force, to maintain the position and form of the beam, and the tension rods tend to sustain it. By observation on the New York and Erie Railroad, Mr. Post stated that the bridges all failed at a very short distance from the abutments—this bridge obviated that evil entirely, and its combination presented several "new and excellent points." Mr. McCallum has taken measures to secure a patent.

Sulphur and Sulphuric Acid.

This substance is very abundant in nature, and is found sometimes pure, but more commonly mixed with other substances. Sulphur has some peculiarities. At ordinary temperatures it is solid, when heated to 226°, it melts, and then it boils at 600°, yielding a yellowish gas; at a temperature below 390°, the melted sulphur is very fluid, though not so much as at 240°. If it is now allowed to cool it first becomes thick, then fluid again; when thrown into water at 240°—when fluid—it becomes a hard brittle mass, but if heated to 600° for some time, and then thrown into water, it remains brown and transparent, and is so flexible that it may be drawn into threads; in this state it is used for taking copies of reliefs, medals, &c., and in a few days it becomes hard, solid and sharp in outline, and is used extensively in making casts for the electrotype process.

Sulphur is insoluble in water, but soluble in alcohol, in ether, and some oils, and with bisulphuret of carbon. It combines with oxygen and the metals, and in that state the metals are called sulphurets. It is very troublesome to iron founders, because it requires to be burned in the open air at 560°, to expel it in the state of gas. When this is done it generally frees the iron from its injurious combination,—but few of our founders are aware of this peculiarity, hence the iron is heated up rapidly to 1000°. The roasting of ores (sulphurets) is for the purpose of driving away the sulphur; hence great care should be exercised to conduct the process in a perfect manner. Experience and watchfulness are requisites which should belong to every one who has charge of roasting sulphur ores.

Sulphuric acid is a combination of sulphur 2, oxygen 2; this acid is manufactured extensively in Boston. Sulphuric acid is manufactured in large leaden chambers, the leaden plates of which are joined together by the oxy-hydrogen blow-pipe—thus they are run together without the intervention of solder, as the common solders would be acted on by the acid. We would recommend this plan to be generally adopted in joining all leaden plates for whatever purpose. Platina vessels are employed to concentrate it, and the acid itself is very extensively used in almost every department of the arts and manufactures. It is used by the silversmith, dyer, bleacher, in the refining of the metals and the making of paints, &c. Dr. Liebig uses this pithy expression—"it is no exaggeration to say, we may fairly judge of the commercial prosperity of a country from the amount of sulphuric acid it consumes." Our moulders use it for cleaning their castings, and our chemists for making soda out of salt.

Coating Iron with Copper.

As we have had not a few enquiries respecting Mr. Pomeroy's invention for coating iron with copper, since we noticed the same about six weeks ago, we will describe the leading features of the patent, so as to obviate future trouble to us, by letter or inquiry about it. The first process consists in immersing the iron plate or plates in dilute sulphuric acid, submitting them to a brisk heat, and then immersing in a solution of clay and water, of such a consistency that a sufficient quantity of clay may coat the plate uniformly, when the said plate is again submitted to a brisk heat, and when dry is ready for the next process. This process is to have a bath of molten copper placed over a furnace to keep it fluid, and into this is dipped the prepared iron plate. Sheet iron so treated should not be kept in the bath but a few seconds, or it will become *hot* short; after it is dipped it may be run between rollers, to make it smooth. The thicker the iron plate is, the longer may it be kept in the copper bath, and the thicker will be its coating. The coating of copper may be increased with subsequent immersions. All the metal should be covered with the copper or it will oxidize faster than if there was no coating. It is stated that iron can be coated with brass in the same way as with the copper. The clay coating is the principal feature of this invention, that is, the coating of the metal with clay, preparatory to its immersion in the bath of copper or brass.

The Britannia Tubular Bridge.

On the 21st Oct., (last month) the government inspectors instituted a series of experiments on the great Tubular Bridge. A train of two locomotives and 28 wagons with 280 tons of coal was drawn into all the four tubes. The deflections were ascertained to be exactly three-fourths of an inch under this load, over the immense mass. After a repetition of this experiment, this great train was taken out about a mile and shot through the tube with the greatest attainable velocity, when the deflection was found to be less than when the load was allowed to remain at rest in the tube.

Messrs. E. & L. Clark, the resident engineers, have watched, from day to day, the effect of gales upon the tube, and have stated that the heaviest gales do not produce so much motion over the extent of the tube as the pressure against the sides by ten men. The strongest gusts of wind do not produce more oscillation than one-quarter of an inch. The action of the sun, at noon-day, only moves the tubes about three-eighths of an inch.

If a compass is held over any part of the bottom cells, the south pole is affected, when held over the top cells the north pole is affected. This effect is observable in all parts of the tube, although its position is only 10° of the magnetic meridian. The work on this bridge was commenced on the 13th of April, 1846, and on the 5th of last March the first engine passed through it. It has thus been four years in the course of construction. The effect af two trains running through the parallel tubes at the same time, makes a noise resembling distant thunder. Large models will be exhibited at the Great Fair of the Industrial Exhibition, but we recommend our American friends who go there, if they have the funds and time to spare for such a trip, to visit the Bridge itself.

Patents Granted---Secret Use.

Four of the patents on our list of this week, were applied for through this office. Some of the very best and most successful inventions which have been patented recently, have come through the same source. The march of improvement is still onward, and the progress of invention is steady and firm. Every improvement and discovery applicable to the useful arts, is entitled to the protection of a patent. The secret use of an invention is no security to the continued safe using of it, even by the inventor, for another may discover the same thing, secure a patent and stop the inventor from using his own invention. It is also as easy to keep an invention secret and use it thus, after it is patented, as to keep it secret without a patent,—there is thus a perfect security for the inventor.

West India Mail Company.

This British Company recently held its half yearly meeting at the London Tavern (London.) The disbursements were $735,580, the income was $1,134,225 leaving a surplus of $398,645,—good profits, undoubtedly. There was a general increase on the profit sheet over 1849. Mails are to be carried to the Pacific from England twice every month, according to the recent negociation with this company and the government. Five new steamships of 2,250 tons, with engines of 800 horse power, like the Asia, are constructing, and will be ready for sea early in 1851. The company is in a very prosperous condition, and are determined to run our Pacific lines as closely as possible, but there is no fear of the American line, they will come off with flying colors.

It is often asked of us, "Is lead used in the whitening of sugar?" It is, but not white lead. It is stated that the lead is all removed from the sugar. It should be made the test of chemical experiment.

The "Southern Press," at Washington, will please to accept our thanks for its courtesy.

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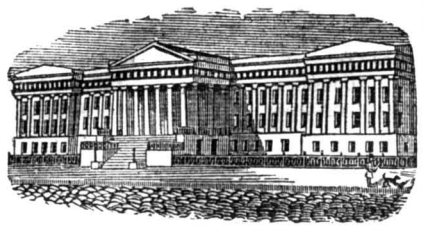

☞Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING NOVEMBER 5, 1850.

To Alanson Cary, of Worcester, Mass., for improvement in machines for dressing irregular forms.

I claim the toothed wheel upon the shaft, arranged so that it is capable of being thrown in gear with either of the racks, in combination with the dog on the slide, and the notched projection on the table, by which the slide is locked to, or unlocked from, the table, for the purpose of enabling the wheel to give either a rectangular motion to the slide or a circular motion to the table, as may be required, in the manner and for the purposes substantially as herein set forth.

[This machine is one of the most beautiful and effective in operation that we ever saw; it is not for concentric turning, like Blanchard's, or other lathe machines. It is beautifully adapted for making ivory and other knife handles.]

To Wm. H. Davis, of Maysville, Ky., for improvement in Rotary Pumps.

I claim the two pistons acting alternately with each other as rotary partitions, in connection with the arms and apparatus by which they are worked, substantially as above set forth.

To F. P. Dimpfel, of Philadelphia, Pa., for improvement in Furnaces for Steam Boilers.

I claim the method, substantially as described, of making the box lining of furnaces with a partition or division plate or plates between the inner lining and outer shell, to direct the current or currents of air before entering the fire, substantially for the purpose and in the manner specified.

I also claim the manner of arranging the furnace door with its interior plate or lining, in combination with the tube or apertures for blowing or forcing in air, steam or other cooling medium between the door and said plate, all as herein specified, irrespective of form, and also of the manner of producing the forced current of the cooling medium.

To R. A. Fisher, of Sanburg, Pa., for improvement in Washing Machines.

I claim the arrangement of three vertical presses or washers, in combination with the fan arranged and operated in the manner and for the purposes set forth.

To Junius & Alfred Judson, of Rochester, N. Y., (assignors to Junius Judson,) for improved Valves for Governors.

To A. S. Macomber, of Bennington, Vt., for improvement in Straw Cutters.

I claim the application and use of rotary spiral cutters, which are self-feeding, in combination with a stationary knife, or cutting edge, in the manner and for the purpose, substantially as described.

[See engraving, page 396, Vol. 5, Sci. Am.]

To Wm. McCoy, of Fannellsburgh, Pa., for improvement in Lime Kilns.

I claim, first, the construction of an upper tier or tiers of arches, in the manner herein set forth.

Second, I claim the recesses or openings in combination with an upper tier or tiers of arches, for the purpose of creating a draft through the structure after the lower arches have become stopped up.

To Joseph Pine, of New York, N. Y., (assignor to Benj. Pine,) for improvement in the running gear of carriages.

I claim the axles of the wheels having racks on their inner ends meshing into central cog wheels, the front one of which meshes into a segmental rack on the inner end of the pole of the carriage; the whole being constructed, arranged and operating in the manner substantially as described.

[See engraving, page 236, Vol. 4, Sci. Am.]

To Wanton Rouse, of Taunton, Mass., for improvement in operating the copping rail of cop spinners.

I claim changing the direction in which the ring rail is moved and the speed at which it is operated, for the purpose of governing the winding of the thread on the cop, and forming a bind thread by means of the combination of the shaft, having a toothed wheel and a smaller wheel fast upon its axis, with the shaft having on it, also, a fast toothed wheel and a loose smaller wheel or pinion, operated by shifting belts and pulleys or other similar changing or reversing gear.

[This is a good invention.]

To C. W. Schindler, of New York, N. Y., for improvement in hardening fats and oils.

I claim the hardening of fatty or oily substances, without separating the stearine from the oleine to such a degree that they can withstand a heat of at least 135 degrees Fah. without melting; using for that purpose the ingredients of cera japonica and elemi, in the manner and proportions above described, which will produce the intended effect.

To H. S. Vrooman, of Springfield, Mass., for improvement in clamps for girding emery wheels.

I claim the combination of the screws and toggle joint, with the jaws, substantially as herein described and set forth, for the purpose of producing, first, tension of the girding substance, and then the compound motion of the jaws in closing together and setting down to the object on which the machine rests.

To E. J. Warner, of Waterbury, Conn., for improved mode of fastening hooks and eyes upon cards.

I claim the putting on of the hooks and eyes in such a manner, upon paper perforated as herein described, that the points of the hooks are upon one side of the sheet and the eyes upon the other side, thereby securing the eyes against dropping off from the hooks. I claim nothing in regard to the manner of perforating or folding the paper, nor for any other method of putting hooks and eyes upon perforated paper than the method herein described.

To S. R. Wilmot, of Lafayette, Ind., for improvement in Fly Brushes.

I claim so constructing and adapting the revolving fan or brush, that it may be placed like a lamp upon a table, or may be fixed to the walls or ceiling of a room, or that it may be suspended by a cord over a bed, sofa or cradle, by the means herein fully described.

To John Butcher, of Lowell, Mass., for improvement in apparatus for stretching and smoothing cloth.

I claim the combination of the revolving platform, or table, and the guide roller or apparatus, with the series of stretching rollers, the whole being constructed in the manner and for the purpose as herein specified.

To J. P. Hayes, of Boston, Mass., for improvement in Portable Furnaces.

I claim a summer furnace in which the draft is driven to the fire chamber from the interior of the furnace and the bottom of the same, and passes first up through a flue chamber, (formed between a partition and the periphery of the furnace,) and then down through the fuel, all as herein set forth and for the purpose specified.

To George Starkweather, of Hartford, Conn., for improvement in processes for curing meat.

I claim the method of curing meat by placing it with brine within a vessel and then subjecting it to the combined action of agitation and alternate increase and diminution of atmospheric pressure, substantially as herein set forth.

The Manufacture of brandy is now successfully carried on by John A. Scott, Esq., of Washington County, Miss. It is made from the Scuppernong grape, and is pronounced as good and pure an article as the best French brandy.

The Paris Academy of Sciences has lately given its sanction to a project for the establishment of a system of telegraphic communication throughout Paris.

The Cincinnati Price Current publishes a statement of the number of hogs assessed in 76 counties, which show a deficiency of 246,000 head, compared with last year

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The population of Savannah as determined by the census is about 16,000, being an increase of 2,000 within the last two years. This increase nearly is all of white persons.

Telegraph Patents---Morse's, Bain's, and House's Claims.

Since the decision of Judge Woodbury, in Boston, as published by us in No. 7, two weeks ago, we have seen a great number of paragraphs going the rounds, relative to the claims of Prof. Morse. Some have jumbled the case as if it were a trial of the Bain Telegraph. In relation to this, the Baltimore Sun says:—"There has yet been no such issue tried as Morse against Bain, or against any line working under the garb of Bain's patent, either at Boston or at any other place in the United States, to our knowledge. Nor has there yet been any Telegraph case tried which involves the points of infringement of Morse's patents that are alleged to be involved in the case of the Bain lines.

The foundation of Judge Woodbury's decision seems to have been that printing and writing are two different arts.

In his opinion, accompanying the decision, Judge Woodbury gives to Professor Morse, as the inventor, the exclusive right to use the signs for telegraphing, composed of dots, lines and spaces; the right to record at a distance by means of these with electricity, and the local circuit."

The Philadelphia Ledger commenting on the above, says, "Judge Woodbury's decision says, in plain English, as we understand it, that as House uses the letters of the alphabet for recording intelligence at a distance, he does not therefore violate Professor Morse's patent, who does the same thing by an alphabet composed of dots and lines. The right to thus record by means of electricity and the local circuit, is conceded to Prof. Morse. Admitting the correctness of this decision, there seems to be little ground for Bain to rest his pretensions, using, as he does, all the means which Judge Woodbury concedes to be covered by Professor Morse's patent. As to Morse and Bain, however, suit has been brought in the United States District Court for this district, which will probably be heard by Judge Kane in April next. The suit heard by Judge Woodbury, of Smith against House, will be taken to the Supreme Court in banc, where the whole issue will be reviewed; and if that tribunal should think with Judge Woodbury that the shape of the sign conveying intelligence of a fact, whether a dot and a dash or a letter of the alphabet, constitutes a substantial difference, it will probably be an end of that case. But is there in common sense any substantial difference? Is one a system of writing and the other of printing? Both write but in different tokens. Neither print, for neither multiply copies, which is the essential element of printing."

Without any other consideration but a desire to arrive at the truth, we would ask what is Morse's invention, what is Bain's, what is House's? The public has been so bothered, with one party claiming this, and another that, which belongs to neither, that there are but few who know any thing about any of their claims in essence. By the above comments of the Ledger any person would infer that the difference between Morse's telegraph and House's consisted in this, viz., the one recorded its messages in stenographic characters, the other in Roman letters. If this had been the sole difference, then Mr. House could not have received a patent in 1846; for a printing telegraph was in use before. The "Ledger" says that neither of the *telegraphs* print, for "neither multiply copies, which is the essential element of printing." We would respectfully correct the "Ledger;" Bain's telegraph does print, if *multiplying* COPIES *is* the essential element of printing, for it can multiply a thousand copies without touching a finger key—no other telegraph does this.

The following is Morse's telegraph claim, to be found in the Patent Office Report for 1846, claim No. 79 of Re-issues—"I claim the system of signs, consisting of dots and lines, substantially as herein set forth and illustrated, in combination with the telegraph for recording signals." This is very plain; if Bain uses a different combination of like characters, then it is surely no infringement, for neither of these gentlemen invented the dot and dash alphabet.

In 1837 Morse used a very clumsy alphabet,—it was a system of V W. If any person will look at Silliman's Journal, Oct., 1837; Franklin Journal, Sept., same year, and Alfred Vail's work, page 75, he will see this alphabet. At that time Steinheil used a dot and curious dash alphabet, but he used a whole alphabet of dots; it is illustrated on page 179 of A. Vail's work, and illustrated in M. L'Abbe Moigno's new French work. "Honor to whom honor is due."

Our idea of the essential *element* of Morse's telegraph is the Electro Magnet, to make marks of dots, dashes, and spaces, by mechanical action, the pen being lifted up, brought down, and held on to the paper at regular intervals, by breaking and closing the circuit. It is no doubt a beautiful telegraph—it has no superior. Bain's telegraph does not use a magnet nor make mechanical marks; the pen is not lifted from the paper at all, but the signs are recorded by the chemical action of the current, not its mechanical; the two systems, then, are entirely different, for the chemical telegraph pen is never lifted off the paper, the same as the electro magnet pen.

Royal E. House's claims are to be found in the Patent Office Report for 1846; he has seven claims, too long for us to publish, but there is no claim for the use of the Roman alphabet, and it is our opinion that Judge Woodbury was not quite minute and clear in respect to his remarks about the signs used in telegraphing, as mentioned in the paragraph above.

The Iron Trade of England before the Discovery of Coal.

In Henry the VIIth's reign the export of iron from England was very small. Biscay, then as now, the most flourishing part of Spain, was the great iron country of those days. Considerable quantities of Biscayan iron were imported into Liverpool. The quality of the Spanish iron was much superior to that of the English. Camden, speaking of the iron made in the great forest of Andradswald, in Sussex (then the greatest iron district in England) says that it was less tenacious than the Spanish iron, either from nature or want of skill in the manufacture. The forest of Dean was the second iron district in England in extent; and the manufacture was carried on in many parts of the kingdom, amongst others at Bury, and at Furness, in Lancashire. It ceased about Bury in the reign of Henry the Eighth, from want of wood for the furnaces. It was also suspended in the rich mineral district of Furness, in the reign of Queen Elizabeth, for the same reason. There the farm-tenants agreed to pay a bloomery rent to the lord of the soil, on condition that the furnaces should be blown out, and that the young trees, used in the iron manufacture, should be kept to feed their cattle in the winter months. So general was the alarm caused by the wasting of the woods in the manufacture of iron, that an act was passed in the first year of Queen Elizabeth's reign, declaring that no timber, a foot square at the root, should be cut anywhere within fourteen miles of the sea, or of the rivers Thames, Severn, Wye, Humber, Dee, Tyne, Tees, Trent, or any other river, to be used in making iron, except in Sussex and in the weald of Kent, where the forests were then considered inexhaustible. A further act was also passed in the same reign, in the year 1591, declaring that no iron works should be formed any where within twenty-two miles of London. The following are the places at which iron was produced during the reign of the Tudors:—The Weald, or Wild of Sussex and Kent: the forest of Dean, in Gloucestershire; Bury and Furness, in Lancashire; Bloomfield and Ruabon, in North Wales; Walsall, in Staffordshire; and Lantrissant, in South Wales.

The annual amount of travel on the Mississippi river is about 500,000. The annual loss of human life for several years past has been over 200; by burning, blowing up, and drowning, to say nothing of sicknes.

M. Poitevin lately made a balloon ascent from Paris, with some girls dressed like angels. When they got up to the cold clouds the ladies changed their dresses; all went off safe.

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TO CORRESPONDENTS.

"S.O.T.,of Miss."—The motion of a machine is always more or less variable, owing to the irregularity, both of the power which works it, and of the resistance which it has to overcome, hence the fly wheel is of great advantage in regulating motion, by its weight it diminishes the effect of increased action, and by its inertia it carries on the machine with uniform velocity.

"J. L., of Ind."—You may think us ungenerous for refusing to read your communication of the 22d inst., but we must do so, even at the hazard of forfeiting your good will. The writing is extremely bad, and the lines are so near together that it is impossible for us to make it out, without spending more time upon it than we can afford to give. Correspondents ought to manifest some judgment when they write us, as certainly our time is of some value. To read and answer such a letter as yours would require a half day's time.

"L. P., of N. H."—You can use the roller without fear of trouble. There is no patent on it.

"A. G., of Geo."—Yours is received. Do not know the prices of the calculator or pump.

"H. P. C., of Mass."—We can furnish 17 numbers of the first part of Vol. 4, at 50 cts. Thank you for those numbers.

"H. A., of R. I."—We ordered the numbers of the "Journal" you are short of some time since—and are surprised that they have not been sent. The order has been renewed at your request.

"D. E. G., of Ohio."—Your order has been attended to. The plate was sent to Mr. P., at Philadelphia.

"Messrs. P., of Mass."—There is none of the liquid glass to be found in this city, to our knowledge, as an article of sale; pure bismuth is $2 per pound, granulated tin is 50 cents per pound, foil $1, pure lead is 12½ cents per pound.

"T. J. C., of S. C."—An engine of 10 horse power is sufficient to drive one of the planing machines.

"W. H. R., of Pa."—We do not find the claims of Mr. Brown in the list of '42 or '44. You must be mistaken in the date.

"H. A., of Providence."—The back numbers of the Journal have been ordered again, we do not understand the cause of the delay, as we wrote for them some months since, and were informed that they would be sent without delay.

"C. E., of Pa."—We have sent you the back numbers from the commencement of this volume. The articles upon the Voltaic Battery will furnish you with all the information you desire. They are prepared by one of the best elecro-metallurgists in this country.

"E. A. J., of Mo."—We think your ideas are not correct. You ought not to attempt to deal with such hard subjects without more knowledge of them.

"C. J. F., of Me."—We do not know of any second-hand engines of 5 horse power for sale. You would need one of that capacity, and it is not improbable that we may be able to find one soon which would answer your purpose. The shingle machine we can furnish at any time, see advertisement.

"C. R., of Miss."—See our advertisement of Foreign Patent Agency in another column. We do the business with much facility.

"Z. E. W., of Pa."—The cylinder should not be over one foot long. It can be sent by express to this office.

"McCormick & Naylor."—We have received for you 20 dollars, which is subject to your orders.

"L. L. H., of N. Y."—The information you solicit cannot be obtained. Mr. B. says he is not ready to divulge his secret yet.

"T. R. W., of Ohio."—We do not see anything that could be patented in your churn.

"P. S. W., of Pa."—We have never seen an arrangement like yours, but we cannot look upon your secondary shaft in any other light than negative, for it is the first which drives the one you intend to get the speed from.

"G. W., of Pa."—There is no patent existing in this country upon Fourneyron's Turbine that we know of.

"T. W. B., of Geo."—A good set of draughting instruments will cost $25. Inferior sets can be bought for less—they cannot be sent by mail. We thank you for the fine list of subscribers.

"L. F. W. of N. C."—We cannot perceive any difference in the principle of your invention from that of the barrel organ, but we never saw it applied to a piano. We do not believe you could get a patent. The principle of your pump syphon, is well known, but it is so difficult to render prabtical that it has never been used for any purpose, but for emptying liquor from one vessel to another.

"M. D, of R. I."—There is a work published by Appleton for $1, which professes to give you all the necessary light on the subject.

"J. K., of N. Y."—We will endeavor to have something for you in the course of two or three weeks.

"J. L. N., of S. C."—We have been trying to get the information which you desire so as to be of benefit to you; as yet, we have not been able to do you justice, for there is a great contrariety of opinion among those we have consulted.

The specifications and drawings of the following inventions have been forwarded to the Patent Office since last acknowledged through the columns of the Scientific American.

S. & T., of Phila., improvement in a jacquard machine.

A. D. S., of N.Y., improved grate for stoves, etc.

H. A., of Ill., improved harvester.

W. &. F.,of L. I., caveat.

F. C. G., of N. J., improvement in door locks.

E. E., N. Y., improvement in ice cream freezer.

L. F. W., of N. C. self-rocking and portable swinging cradle. (An engraving of this invention will appear in the next number of the Scientific American.)

Money received on account of Patent Office business, since Nov. 6, 1850:—

W. C. W., of Me. $50; L. W. P., of N. Y. $55; E. E., of N. Y. $20; and G. D., of Ohio, $50.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fees for copying.

ADVERTISEMENTS.

Terms of Advertising:

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known—doing in a first rate manner 2000 broom handles and 4000 chair spindles per day, and other work in proportion. These lathes are simple in construction, not liable to get out of repair, and will do enough more than other lathes, in three months' use, to pay their cost. One of them may be seen at the office of Munn & Co., New York. Price of Lathe for turning broom and hoe handles, rake stales, scythe snaths, windsor and cottage chair legs and pillars, $100, with one set of tools; $125 with two sets. Lathe for turning chair spindles, whip stocks, gun rods, &c., complete, $75. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 9 3m

COTTON MACHINERY FOR SALE—Viz. 4 filling frames, 144 spindles each; dead spindle, nearly new; 1 three head drawing frame, with extra rolls; 1 Mason's speeder, 16 strand; 1 lapper; 1 cone willower; 1 band machine; 1 bundling press; 1 warper—on very reasonable terms, by ELI WHITNEY. New Haven, Nov., 1850. 9 6

SCRANTON & PARSHLEY,—New Haven, Conn., will have finished by the 15th of December, 12 Engine Lathes of 8, 10 and 12 feet beds, and weigh 1500, 1650, and 1800 lbs; price $200, $220 and $240. These Lathes are from a new set of patterns, and are greatly improved from their former small size lathes; they swing 21 inches, and have back and screw gearing, centre rest, follow rest, drill, chuck and overhead reversing pulleys, all hung in a cast iron frame, ready for use. On and after the first of Dec., by addressing as above (post paid) cuts can be had of these, with index card, showing the different pitch threads that these lathes will cut.

Two of the power planers heretofore advertised in this paper, are now ready to ship to the first order; they weigh from 4500 to 4600 lbs., when finished. 9tf

Patent Office.
128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

AMERICAN AND FOREIGN PATENT AGENCY.

WE WOULD remind our numerous friends throughout the country, that we still continue to conduct the business of procuring Letters Patent for new inventions in this and all foreign countries, where the right is recognized Since making arrangements with those eminent attorneys, Messrs. Barlow, Payne & Parken, Editors of the London Patent Journal, we have secured and managed through them, several foreign applications, with the utmost economy and facility. Inventors and others, desiring advice upon this subject, can correspond confidentially with the Editors of this paper.

BLODGETT & LEROW'S ROTARY SEWING MACHINE.—Six silver medals from the different Fairs, at New York, Boston, &c, were awarded this machine; it was patented October 2nd, 1849. One of the inventors, Mr. Lerow, has just returned from Europe, where he has obtained patents for this machine in England, Scotland, and all the British Colonies, also in France and Belgium.

This machine will do fine sewing at the rate of one yard per minute. Over 200 of these machines are now in successful operation in New York, Philadelphia, Cincinnati, Providence, Worcester, New Jersey and other places. For particular reference as to the merits of this machine, we would refer to Messrs. Wm. H. Cary & Co., 245 Pearl st., New York, and also Wm. E. Whiting & Co., 124 Pearl st., N. Y., and to the machine itself, which tells its own story, and which may be seen on application to Wm. E. Whiting & Co., General Agents for the United States, 124 Pearl st., N. Y. 9tf

COPPER STILL FOR SALE.—A still of about 21 gallons' capacity, in good order and tinned inside; has been used very little; its weight is about 90 or 100 lbs., and it will be sold for $21. It can be seen at Mr. Patterson's Hardware Store, Bowery, 2nd door below Bayard street, N. Y. 9 2*

PATENT METALIC OIL FOR MACHINERY—Warranted not to gum. Manufactured under Cumberland Brothers patent (April 6th 1849), by C. L. de la Vergne & Co., Elizabethport, N. J. Transparent metalic, adapted to light bearings, spindles, &c., will last a quarter longer than pure sperm. For burning will be found superior. Fluid White Metallo, of the consistance of cream, to be used without wick and tube, adapted to the oiling of engines, shaftings, &c. will last twice as long as pure sperm oil. Hard White Metallio, to be used instead of tallow, will last three times as long; when used in cylinders, the packing must be renewed. Blue Metallic grease, prepared for greasing the inside of boilers when thoroughly cleaned, that the scale which afterwards collects may be removed with one third the usual time and expense. It is also adapted to the greasing of cog wheels; and for the axels of vehicles it has been found to last more than four times as long as any grease ever used for that purpose.

KENNEDY & GELSTON, Sole Agents,
50 3m No. 8 Pine st. New York.

HISTORY OF PROPELLERS.—This interesting and useful volume, compiled by one of the Editors of the Scientific American, from articles previously prepared for, and published in, Vol. 5 of that paper, is now ready for the Trade. It contains 144 pages of letter-press, and 82 illustrations, embracing views of nearly every kind of propeller that has been invented. This work is beautifully bound in cloth, and is sold at the low price of 75 cts. We also have them in paper covers, for mailing—price as above. Address MUNN & CO., at this Office.

FELLY CUTTING MACHINE.—MESSRS. JOSEPH ADAMS & SONS, Amherst, Mass., offer for sale town, county and State rights, or single machines, with the right to use, of this unrivalled Felly Cutting Machine, illustrated in No. 5, Vol. 6, Scientific American. It is portable, easily kept in order, requires but little power to drive it, and will execute in the most rapid and perfect manner, cutting 60 good felloes in one hour. 6tf

RAILROAD CAR MANUFACTORY.—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of Railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY,
5 tf. THOMAS J. FALES.

TO TIN PLATE AND SHEET IRON WORKERS.—ROYS & WILCOX, Mattabesett Works, East Berlin Station, on the Middletown Rail Road, manufacture all kinds of Tools and Machines of the best quality, both in material and workmanship. This establishment being the only one where both tools and machines are manufactured, superior inducements are offered to the trade; all work warranted, with fair use. Agents in most of the principal cities of the United States and Canada. Orders promptly attended to. F. ROYS,
E. WILCOX.
Berlin, Conn., Nov. 1, 1850. 7 1amly

UNITED PATENT OFFICE IN PARIS AND LONDON.—GARDISSAL & CO., 29 Boulevard St. Martin, Paris, and No. 9 Arthur st. west, city, London. Patents procured in Great Britain and on the Continent: "Le Brevet d'Invention," weekly journal, published by the same firm. 3 4eow*

TO HAMMERSMITHS.—Wanted, a Tilter. Apply to the N. Y. Cast Steel Works, foot of 24th street, East River, New York. 6tf

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

ALLEN'S PLANING MACHINE.—Sole proprietor for Ohio, D. E. GARDNER, Marietta, Ohio. 8 4*

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Hoe Handles, 800; Fork Handles, 500; Broom Handles, 1500, per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid). MUNN & CO.,
14tf At this Office

A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 3m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
48tf Painters and Chemists

COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 1tf

WOOD'S PATENT SHINGLE MACHINES—These excellent machines, illustrated and described in No. 23, Vol. 5, Scientific American, are offered for sale in Town, County and State Rights, or by single machines. There are three sizes, the first cuts an 18 inch shingle, price, $100; 2nd cuts 24 inch, price $110; 3rd, 28 inch, $120. Orders addressed to J. D. Johnson, Redding Ridge, Conn., or to Munn & Co., "S Am." Office, will meet prompt attention.

The above machine can be seen in successful operation at P. R. Roach's mills, No. 138 Bank st., this city. 5lt

MACHINERY.—S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 46tf

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders, wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton, woolen and other mill. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, planing, cutting and drilling machines. Together with all other tools required in machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
40tf WILLIAM B. LEONARD, Agent.

LAP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in diameter. The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France and Germany, for Locomotive, Marine, and other Steam Engine Boilers.
THOS. PROSSER & SON, Patentees,
8tf 28 Platt st., New York.

BRUSH'S IMPROVED DOUBLE-ACTING LIFT AND FORCE PUMP.—From the increased facilities of the subscriber, he is now prepared to furnish, at a reduced price, the most effectual, powerful, durable and yet simple Lift and Force Pump in use. For a house pump, factories, breweries, railroad stations, or any other purpose where a constant stream of water is required, they cannot be surpassed. The public are cautioned against an article purporting to be Brush's Pump, but are invited to call at or address 83 Pike Slip, and get the original. J. A. BRUSH, Inventor. 49 3m*

FACTORY AND WATER POWER.—For rent or sale.—A factory building in New Brighton, Beaver Co., suitable for woollen or cotton factory, 40 by 96 feet, three stories high, with plenty of water power. The driving power is now being made new, and if applied for soon, can be made to suit the renter. Apply to A. W. TOWNSEND, near the premises, or to J. W. GILL, Wheeling, Va. 3 8*

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
46tf Office 5 Wall street, New York.

BOSTON LOCOMOTIVE WORKS.—No. 380 Harrison avenue, Boston, manufacture at short notice, Locomotive and Stationery Steam Engines, boilers,—iron, copper, composition and brass castings; copper work; Van Kuran railroad car and truck wheels, and all kind of railroad machinery.
DANIEL F. CHILD,
1tf Treasurer Boston Locomotive Works.

TO IRON FOUNDERS, &c.—Fine ground and bolted Foundry Facing, viz.: Sea Coal, Charcoal, Lehigh, Soapstone, and Black Lead. Fire Clay, Fire Sand, Keold and Fire Mortars; also Iron and Brass Founder's superior Moulding Sand, in barrels, or otherwise, for sale by G. O. ROBERTSON, New York. City Office 4 Liberty Place, Maiden Lane, near the Post Office. 8 4*

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Scientific Museum.

Scientific Memoranda.

ARTESIAN WELLS.—The famous Artesian salt wells at Kissengen, in Batavia, commenced eighteen years ago, and which it was feared would have to be abandoned as a failure, has recently given the most satisfactory results. The town is located in a saline valley, nine hundred and eighty-four feet above the level of the Baltic sea. Last June the boring had reached a depth of eighteen hundred and thirty-seven feet, and several layers of salt, separated by a strata of granite, had been traversed, when carbonic acid gas, followed again by granite, was found. Finally, on the 12th ult., at a depth of two thousand and sixty-seven feet, perseverance was rewarded by complete success. A violent explosion burst away the scaffolding built to facilitate the operations, and a column of water, four and a half inches in diameter, spouted forth to the height of ninety-eight feet above the surface. The water—clear as crystal—is of a temperature of sixty-six Fahrenheit, and is abundantly charged with salt. It is calculated that the annual product will be upwards of 6,600,000 lbs. per annum, increasing the royal revenues by 300,000 florins after deducting all expenses.

What has become of the Artesian Well in Charlston, S. C. Is the boring of it entirely suspended?

IMPORTANCE OF PURE WATER FOR CATTLE.—Lawrence, in his Farmers' and Graziers' Complete Guide, has the following:

"Dr. Jenner, who conferred that great blessing on mankind—the cow-pock innoculation, considered that giving pure water to cows was of more importance than persons are generally aware. There were farmers in his neighborhood, whose cows, while they drank the pond-water, were rarely ever free from red-water or swelled udders, and the losses they sustained from these causes, together with the numerous abortions their cows suffered, increased to an alarming extent. One of them at length, supposing that the water they drank had something to do with producing their disorders, sunk three wells on different parts of the farm, and pumped the water into troughs for the cattle. His success was gratifying; the red-water soon ceased, and the swellings of the udder subsided; and the produce of the renovated animals increased both in quantity and quality. Other farmers followed the same practice; and in less than six months not a case of red-water, swollen udder or abortion, was heard of in the neighborhood.

FATE OF CAPTAIN TAGGART'S BALLOON.—The balloon of Captain Taggart, which we noticed last week, met with a singular fate, and came near burning up the whole of the buildings of a farm on Long Island. The Balloon, after it passed over this city, wended its way down to Long Island, and descended at about half-past 6 P. M., near the farm house of a Mr. Gildersleve, in the town of Huntington. The car became entangled in the fence of a lane leading to the dwelling and barn, while the balloon gently swayed with the wind above it.

When it was first discovered by a son of Mr. Gildersleve, it occasioned a good deal of surprise, and he called to his aid a brother and his wife, and his mother, to assist in securing it. A large opening was made in the balloon to permit the air to escape; but unfortunately at this moment one of the ladies approached the balloon with a lighted candle, when the inflammable gas took fire, and a violent explosion immediately followed, knocking down the whole party and burning the two young men severely on the face and hands. The ladies escaped with very slight injuries. The balloon was torn to pieces, and enkindled into a blaze at the same time, and the beautiful car with its machinery greatly damaged. The varnished material of the balloon burnt so vividly as to set the fence on fire, which, from its proximity to the barn and dwelling, would have undoubtedly communicated the flames to these also, but for the unusual exertions of the injured persons, who, in great agony, subdued the fire, by tearing down the fence, and throwing water upon the burning fragments of the balloon. The light of the explosion was noticed at the distance of several miles, and the concussion was so great that it was sensibly experienced by the inmates of a dwelling half a mile distant.

Hydrostatics.

The properties of liquids are modifid by the action of two forces, *weight* and *molecular attraction*. We can easily be led to form a distinct idea of each of these forces. Let us refer to the second, or fluids in equilibrium, which in that state exhibits some remarkable properties.

FIG. 1.

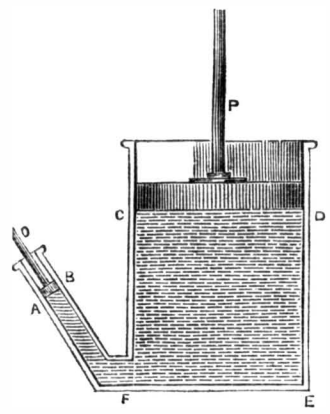
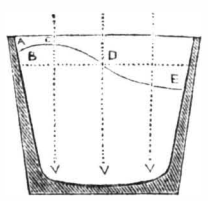


Fig. 1 is a vessel containing liquid supposed to be without weight. A B C D E F is the vessel with a solid piston, P, which exactly covers its surface. If the piston is without weight, it is clear that the liquid experiences no pressure, but suppose the piston to be loaded with 100 lbs., it would sink down into the liquid unless the liquid opposed such a tendency. If we divide the liquid into layers of inches, we will find that each layer supports the 100 lbs. as well as the upper layer, and that the base sustains that amount, and if we divide the base into 100 parts, each part sustains 1 lb. The pressure therefore is transmitted by horizontal surfaces from top to bottom without any loss: the pressure is equal at each point, and that is proportional to the extent of the surface under consideration. But the peculiarity of a liquid as differing from a solid, is, that the effects described are produced on the sides of the vessel, as well as the base. If a lateral opening be made in the direction A B, the liquid will fly out, and if the opening be made of a size equal to the

FIG. 2.



piston, P, it will require a force of 100 lbs. to prevent it from flowing out, but if the opening be 1-100th of the piston, a force of 1 lb., will prevent it from flowing out.

If a hole was made in the piston, P, the liquid would spout out upwards, according to the law of action and re-action. Liquids, therefore, transmit equally, and in all directions, the pressure exerted on any part of them, and this will explain a question often asked in respect to the pressure on different areas—many having a wrong idea of this principle. If the small piston, O, is only 1-100th time the size of P, 1 lb. on O will balance 100 on P, and this will also explain the principle of virtual velocities, for if the piston, O, be pushed in any given distance, the piston, P, will only be moved 1-100th part of that distance—a gain of power from equilibrium, like that of the common lever, which lies at the foundation of the science of mechanics, is a loss of speed. It is this principle which, for simplicity and an absence of friction, gives such advantages to the Bramah press over the wedge, lever or screw, for some purposes. A liquid, to be in equilibrium, must have every point of its surface perpendicular or normal to the force which acts upon it, and each particle must experience equal pressure in all directions.

Let us suppose the surface not perpendicular to the force acting on it, but running in the direction of figure 2, indicated by the line A C D E, while the force acts in the direction of the vertical lines, V V. In this case the horizontal layer, B D, must be pressed by the weight of all the particles above it, and this pressure, as already stated, being transmitted laterally, the molecule, D, would be thrust out, since there is no counterbalancing pressure on the other side, therefore it is thrust aside and another particle occupies its place, and other particles successively take its place until the curve, A C D, has fallen into the depression D E, and the whole surface is horizontal, with all the particles ranged in a plane perpendicular to the force, without which there can be no equilibrium.

(To be Continued.)

Cancer Treatment.

NEW ORLEANS, OCT. 27, 1850.

GENTLEMEN,—The following article in relation to the treatment of that worst of all diseases, the cancer, appeared in the Delta, of this city, Oct 17th, and as it contains information valuable to the world, I have thought proper to enclose it to you, with the hope that it may appear in the columns of your valuable journal, whose reputation stands high in this section.

"This gentleman, whose success in curing some of the most inveterate cancers and tumors that ever tormented humanity, may now be found at 126 Poydras street, where he is daily visited by scores of the afflicted, few of whom are sent away without hope and the prospect of a speedy recovery. In stating this much, we only declare what we see and know. Certificates of cures—of successful medical practice—are so easily obtained, that we generally attach but little importance to them. Those who present such evidences must do so on their own responsibility. In the important matter of preserving the health and life of people, we write editorially only what comes within our own knowledge.

Such is the course we have uniformly adopted towards Dr. Gilbert. We have seen enough of that gentleman's practice to convince us that he possesses an important secret or skill which enables him to master, with astonishing success, one of the most stubborn diseases "which flesh is heir to." To such a well attested reputation, no college diploma could be expected to add much strength or celebrity, and therefore Dr. G. has usually reposed upon his reputation, without seeking such adventitious aids. Those who have reputations to create may require such helps, but they have ceased to command universal confidence among the people.

Whilst, however, a diploma is by no means needed by Dr. G., it is no little credit to the institution which, appreciating his great skill and success, voluntarily confers upon him this parchment distinction. Such was the case on the occasion of his late visit to Memphis, when the Medical College at that place came forward and conferred upon him their diploma. This was an evidence of good sense and liberality in the college. We trust that the public will not have the less confidence in the Doctor on account of this distinction. If they have, we can only recommend them to call and see some cases he has now under his charge, one in particular, of an hereditary cancer, which was rapidly devouring the unhappy subject, and was given up by the most distinguished physicians in the country, but which now, under his treatment, is rapidly recovering, and will be entirely well in a few days." ¶

We have before noticed Dr. Gilbert's success in curing the cancer, in our columns. We have no disposition to puff any man, but we would not refuse our aid in extending a knowledge of a successful treatment of this shocking disease, and we are assured the authority is sufficiently good to warrant us in vouching for its accuracy.

The Charleston S. C., Sun says: a Convention of Manufacturers is to be held in the city of Richmond, on the 18th instant, to prepare a suitable memorial to be presented to Congress at the commencement of the ensuing session, setting forth all the facts believed to be the cause of the present extremely depressing state of manufacturing industry, and urging the necessity of a speedy revision of the tariff laws.

Philadelphia Art Union.

It gives us pleasure to learn that this excellent institution is in a flourishing condition. Its subscribers for the present year have already exceeded the expectations of its managers, and the list is constantly increasing. The subscribers' plate, this year, is the finest that we have seen executed in the country: A. H. Ritchie, of New York, is the artist. It is worth the whole subscription price, and this we have heard not a few say, when admiring it, in this city.

LITERARY NOTICES.

MARINE AND NAVAL ARCHITECTURE.—Number 11 of this incomparable work, by John W. Griffiths, Marine and Naval Architect, has just been issued, and we would remind those who may be desirous of obtaining this work, but who have not yet become subscribers, that the next number completes the volume and they should at once send in their subscriptions.

We understand that Mr. G. has made proposals to the Navy Department to build a war steamer in one of the Navy Yards, using for her frame 60 per cent. of such timber as has been cut for steamers' frames, but which has been condemned in consequence of its exclusive adaptation to heterogeneous models. The vessel he proposes to build to be able to make a passage, in ordinary weather, from this city to Liverpool within nine and a half days; one of the conditions of the proposal is, that he have the entire control of the construction of the hull and engines. He also proposes to build a sailing ship, under similar circumstances, that shall be able to out-sail any vessel of the same amount of displacement in the navy of the United States.

ICONOGRAPHIC ENCYCLOPEDIA.—Part 13 of this unrivalled work on Science, Literature and Art, just published, by Rudolph Garrigue of No. 2 Barclay st., is now before us, and like its predecessors, maintains its high character of excellence. It contains beautiful plates of the Chinese, and other Asiatic nations, the North American Indians, and Africans, in various positions, exhibiting their manners and customs. Twelve more numbers will complete this work, which will then form the most beautiful encyclopedia in our language.

Shakspeare's Dramatic Works, Phillips, Sampson, & Co., publishers, Boston; Dewitt & Davenport, New York, Agents.—Number 27 contains "Troilus and Cressida," embellished with a beautiful engraving of the latter.

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AND
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The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

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PREMIUM.

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